Glossary

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algorithm	A formula which establishes the mathematical relationships between variables and fixed parameters.
action level	The numerical value that causes the decision maker to choose one of the alternative actions (e.g., compliance or noncompliance). It may be: a regulatory threshold standard, such as Maximum Contaminant Level for drinking water; a risk-based concentration level; a technological limitation; or a reference-based standard. The action level is specified during the planning phase of a data collection activity. It is not calculated from the sampling data.
analyte	The element, compound, or species detected and determined through analysis. Analytical methods require calibration for quantitation of specific analytes.
assessment	The evaluation process used to measure the performance or effectiveness of a system and its elements.
batch	Environmental samples prepared and/or analyzed together with the same process and personnel, using the same lot(s) of reagents.
blank	A QC sample used to detect and identify contaminants introduced to samples during the collection, transportation, storage, and measurement process. A laboratory blank is an analyte-free matrix carried through all or part of the analytical process for the purpose of identifying contamination introduced during analysis. Types of laboratory blanks include method blanks (carried through the entire preparation and analysis sequence), calibration blanks (matrix-matched reagent water used for calibration), and storage blanks (placed in sample storage areas). In the field, an analyte-free matrix is carried through a portion of the field process to identify contamination introduced during field or transportation operations. Types of blanks associated with the field are trip blanks (these accompany samples through the transportation process), equipment rinsates (collected after decontamination), and field blanks (collected on-site during the sampling event).
calibration	Comparison of a measurement standard, instrument, or item with a standard or instrument of higher accuracy to detect and quantify inaccuracies and to report or eliminate those inaccuracies by adjustments.

	The result of a calibration may be recorded in a document, sometimes called a calibration certificate or a calibration report. The result is sometimes expressed as a calibration factor or as a series of calibration factors in the form of a calibration curve.
calibration method	Defined technical procedure for performing a calibration.
certified reference material (CRM)	A reference material in which one or more of its property values are certified by a technically valid procedure and is accompanied by or traceable to a certificate or other documentation which is issued by a certifying body.
chain of custody (CoC)	An unbroken trail of accountability that ensures the physical security of samples, data, and records.
confidential business information (CBI)	Information considered "business sensitive" by the originating organization that must be controlled to prevent unauthorized review, distribution, or use.
contract required detection limit (CRDL)	Minimum level of detection acceptable under the contract statement of work (SOW). The inorganic SOW for the CLP gives CRDLs that should be attainable by the laboratory.
contract required quantitation limit (CRQL)	Minimum level of reliable quantitation acceptable under the contract SOW. Typically, for the CLP, a list of organic analyte quantitation limits that most laboratories are expected to be able to achieve. Used as the basis for reporting limits under CLP OLM protocols.
Contractor	The entity responsible for collection of field samples and contracting for analytical services. The Contractor may provide the Navy with services under a RAC or CLEAN contract. A Contractor may also be a Navy organization that contracts directly with a laboratory for analytical services. In this manual, Contractor refers to the Prime Contractor as opposed to the subcontractor.
control chart	A tool for using statistically derived control limits as the basis for real-time data quality analysis and long-term trend analysis.
control limits	Represent acceptance criteria for determining whether an analytical system is in control. Control limits may be specified in a reference method (either as mandatory or guidance limits) or developed by a laboratory using internal performance data.
control sample	A QC sample introduced to the analytical process to allow evaluation of the measurement system performance.
corrective action	An action taken to eliminate the causes of an existing nonconformance, deficiency, or other undesirable situation in order to prevent recurrence.
data quality assessment	A statistical and scientific evaluation of the data set to assess the

(DQA) process	validity and performance of the data collection design and statistical test, and to establish whether a data set is adequate for its intended use.
data quality objectives (DQOs)	Qualitative and quantitative statements derived from the DQO process which clarify study objectives, define appropriate type of data, and specify the tolerable levels of potential decision errors which will be used as the basis for establishing the quality and quantity of data needed to support decisions.
data quality objectives process	A systematic strategic planning tool based on the scientific process that identifies and defines the type, quality, and quantity of data needed to satisfy a specified use. The elements of the process include the following steps: • Define the problem concisely; • Identify the decision to be made; • Identify the key inputs to that decision; • Define the boundaries of the study; • Develop the decision rule; • Specify tolerable limits on potential decision errors; and • Select the most resource efficient data collection design. DQOs are the qualitative and quantitative outputs from this process.
data validation	A systematic process through which project data are compared to established criteria to provide assurance that the data are adequate for the intended use. The frequency and scope of the data validation process may vary, but shall always be consistent with project DQOs.
deficiency	An assessment conclusion which identifies a condition which represents a significant impact on an item or activity. A deficiency may be an unauthorized deviation from acceptable procedures or practices, or a defect in an item.
demonstration of method performance (initial demonstration of analytical capability)	Procedure to establish the laboratory's ability to generate acceptable accuracy and precision required in many of the EPA's analytical methods. In general the procedure includes the addition of a specified concentration of each analyte (using a QC check sample) in each of four separate aliquots of laboratory pure water. These are carried through the entire analytical procedure. The percentage recovery and the standard deviation are then determined and compared to specified limits. Appendix C, Attachment 2, details demonstration of method performance.
double blind PT	A proficiency test sample introduced to the laboratory in such a

	manner that the entire analytical staff is unaware that the sample is a proficiency test sample. A double blind PT sample is an effective means of assessing a laboratory's routine performance.
duplicate	A QC sample used to determine the precision associated with all or part of the sample collection and measurement process. Field duplicates are used to determine the precision associated with the entire sample collection and measurement process. Field duplicates are two independent samples collected, as nearly as possible, from the same point in space and time. The two field duplicate samples are collected from the same source, using the same type of sampling equipment. Each field duplicate is collected and stored in separate sample containers and transported in the same shipping container. Field duplicates should not be used as a measure of laboratory performance. Types of laboratory duplicates include matrix duplicates, and matrix spike duplicates. A matrix duplicate (typically called a laboratory duplicate) is used to determine the precision of the intralaboratory analytical process for a specific sample matrix. A laboratory sample and its associated matrix duplicate are prepared in the laboratory as split samples, and carried through the entire measurement process as independent samples. A matrix spike duplicate is also used to determine the precision of the intralaboratory analytical process for a specific sample matrix. A matrix spike sample and its associated matrix spike duplicate are prepared in the laboratory as split samples, and each are spiked with identical, known concentrations of targeted analyte(s).
equipment rinsate blank	A sample of analyte-free water poured over or through decontaminated field sampling equipment that is considered ready to collect or process an additional sample. The purpose of the equipment rinsate blank is to assess the adequacy of the decontamination process.
field blank	A sample of analyte-free water transferred, at the project site, into an appropriate container to distinguish ambient air contamination from in-situ sample contamination.
holding time	The elapsed time between time of sample collection and time of verified sample receipt by the laboratory, as defined by CLP methods. For non-CLP methods, the holding time is the elapsed time between sample collection and the execution of the determining activity in the laboratory, either preparation or analysis, as defined by the applicable method.
implementing procedures	The written, approved procedures that serve as the basis for implementation of a quality management system and its policies. In laboratories, these are usually referred to as standard operating

	procedures, or SOPs.
IR projects	The purpose of IR projects are to identify, investigate, or clean up hazardous waste sites. These projects may be funded by ER, N or BRAC. BRAC projects are considered IR projects if the purpose of the project is to remediate the site prior to closure. BRAC funded compliance projects are not subject to the requirements presented in this manual.
laboratory	A body that calibrates and/or tests. Specifically, the Navy defines an environmental laboratory as any fixed or mobile facility, in whole or in part, that performs testing for environmental regulatory reporting and/or to determine compliance with federal, state, regional and/or local environmental laws and regulations. This excludes process environmental control laboratories, provided none of the results are reported to a regulatory agency to determine compliance. The Navy has both single service and multi-service laboratories. Single service laboratories are defined as those laboratories that exist to perform testing in support of a particular function at an activity, such as wastewater treatment. Multi-service laboratories are defined as those laboratories that exist to perform testing in support of multiple functions at an activity (i.e., hazardous waste disposal, drinking water monitoring, wastewater treatment, etc.).
laboratory control sample (LCS)	A QC sample consisting of a known matrix spiked with a known amount of targeted analytes. The LCS is carried through the entire analytical protocol, including preparation, clean-up, and determinative procedures, and is used to monitor the overall accuracy of the analytical measurement process. Control limits for LCS recovery, typically expressed as % recovery, serve as acceptance criteria for determining whether an analytical run is in control, and are used for development of statistical control limits.
matrix (a.k.a., sample matrix)	The component or substrate containing the analyte(s) of interest. Examples include: groundwater, high clay content soil, concrete, drinking water, brine, sediment, and sludge. Matrix QC samples are used to assess the impact of the sample matrix on recovery of the analyte(s) of interest.
matrix spike (MS)	An aliquot of sample spiked with a known concentration of target analyte(s) prior to sample preparation. The recovery of target analyte(s) from the matrix spike sample is used to determine the bias of the method in the specific sample matrix.
matrix specific QC samples	Matrix specific QC samples are used to measure the impact of sample matrix on method performance, but, because matrix specific QC results are highly dependent on the nature of the

	sample matrix, they are not generally indicative of laboratory performance. Examples of matrix specific QC include: laboratory duplicate, matrix spike, matrix spike duplicate, and surrogate.
matrix spike duplicate (MSD)	Used to determine the precision of the intralaboratory analytical process for a specific sample matrix. A matrix spike sample and its associated matrix spike duplicate are prepared in the laboratory as split samples, and each are spiked with identical, known concentrations of targeted analyte(s).
method (a.k.a., reference method)	A body of procedures and techniques for performing an activity (e.g., sampling, chemical analysis, quantification) systematically presented in the order in which they are to be executed. Within the scope of this manual, the term "method" normally refers to a sampling or analysis procedure that has been officially specified by an organization, such as EPA, ASTM, AIHA, or state agencies.
method detection limit (MDL)	The minimum concentration of an analyte which can be measured and reported with 99% confidence that the actual analyte concentration in the sample is greater than zero. A matrix-specific MDL is experimentally determined through analysis of replicate samples containing the target analyte. The reference for determination of MDL is provided in 40 CFR Part 136, Appendix B.
Method Quantitation Limit(MQL)	The value at which the laboratory has demonstrated the ability to reliably quantitate target analytes for the method performed. In absence of project specific requirements, the MQL must be set using the lowest standard used by the laboratory for initial calibration (or initial calibration verification) for each target analyte.
observation	An assessment conclusion which identifies a condition which does not represent a significant impact on an item or activity. An observation may identify a condition that does not yet cause a degradation of quality.
performance based measurement system (PBMS)	A set of processes wherein the data quality needs, mandates, or limitations of a program or project are specified and serve as criteria for selecting appropriate methods to meet those needs in a cost-effective manner.
proficiency testing (PT)	Determination of field or laboratory testing performance by means of inter-laboratory comparisons.
project planning documents	Describe project plans for field activities and for sampling and analysis plans, and are submitted to the responsible Navy RPM for approval. Examples of planning documents include: site

	specific work plan, sampling and analysis plan, and QA project plan.
prime contractor	see definition of Contractor
project file	Records documenting activities, decisions, or directions regarding work on a specific Navy project. Laboratories and Contractors maintain project files.
quality assurance (QA)	An integrated system of management activities involving planning, QC, quality assessment, reporting, and quality improvement to ensure that a product or service (e.g., environmental data) meets defined standards of quality with a stated level of confidence.
quality assurance officer	As used in this manual, the individual responsible for development, documentation, and assessment of a laboratory's QA program.
quality assurance project plan (QAPP)	A formal technical document describing in comprehensive detail the necessary QA, QC, and other technical activities that must be implemented to ensure that the results of the work performed will satisfy the stated performance criteria.
quality control (QC)	The overall system of technical activities which measures the attributes and performance of a process, item, or service against defined standards to verify that they meet the stated requirements established by the customer.
quality manager	As used in this manual, the senior individual responsible for development, documentation, and assessment of an organization's quality program.
quality manual	A document stating the quality policy, quality system, and quality practices of an organization. The quality manual, however named, may call up other documentation relating to the laboratory's quality arrangements.
quality system	The organizational structure, responsibilities, procedures, processes, and resources necessary for implementing quality management.
quantitation limit (QL)	The concentration of an analyte which can be reliably quantitated to a known degree of accuracy in a particular matrix using the referenced method within specified limits of accuracy and precision. The QL is typically 3-10 times the MDL, and is highly matrix dependent. The samples used for MDL studies are typically spiked at the quantitation limit, and if all study criteria are met, may be used to document analyte recovery at the quantitation limit.
reference material	A material or substance one or more properties of which are

	sufficiently well established to be used for the calibration of an apparatus, the assessment of a measurement method, or for assigning values to materials.
reference method	The published method which serves as the basis for a laboratory's sampling and/or analysis procedure.
reference standard	A standard, generally of the highest metrological quality available at a given location, from which measurements made at that location are derived.
reporting limit (RL)	The threshold value below which the laboratory reports a result of "less than" or "not detected".
requirement(s)	A translation of the needs into a set of individual quantified or descriptive specifications for the characteristics of an entity in order to enable its realization and examination.
sampling event	A sequential sampling campaign at a single contiguous site for a single matrix. A sampling event begins with collection of the first sample and ends when: sampling at a site is discontinued for an extended period (excluding weekends or routine days off); the ambient conditions at the site change; or an unanticipated change in the sample matrix is encountered.
single blind PT	A proficiency test sample that is known to be a proficiency sample by members of the laboratory staff, but the actual composition of the sample, in terms of types and concentrations of analytes, is unknown (i.e., "blind"). Single blind PT samples may not be a good indicator of routine laboratory performance, particularly when the laboratory has to reconstitute the sample from a concentrate.
split sample	A sample which may be used to assess intra- or inter-laboratory precision of the measurement process. Field split samples are obtained by preparing two (or more) individual sample aliquots after thorough homogenization of a single sample in the field. A field split sample may be used to determine intralaboratory precision if the split samples are submitted to a single laboratory. A field split sample may be used to determine interlaboratory precision if the split samples are submitted to different laboratories. The degree to which split precision data represent a true measure of laboratory precision is limited by the degree to which the sample is homogenized in the field. If the field sample is not effectively homogenized, the resultant data may not be used to assess laboratory precision.
standard materials	Neat chemicals or purchased stock standards that are used as the basis for analyte quantitation or for the preparation of QC samples.

standard operating procedure (SOP)	An approved, controlled document describing practices for a given procedure or activity, in sufficient detail which a qualified individual could use the SOP to conduct the procedure.
subject matter experts	Individuals whose academic training, theoretical knowledge, and practical experience in a particular subject matter qualify them as experts in the relevant subject matter.
surrogate	An analyte used to monitor method performance on a matrix-specific basis. A surrogate is a pure analyte added to the sample aliquot in known amount, prior to sample extraction. The surrogate, which is similar to the method target analytes in composition and behavior, is not ordinarily found in environmental samples. Because surrogates are generally added to each sample in a batch, they can be used to monitor recovery on a sample-specific, rather than batch-specific basis.
target analyte	The element, compound, or class of compounds detected and quantitated through the analytical measurement process.
test	A technical operation consisting of the determination of one or more characteristics or performances of a given product, material, equipment, organism, physical phenomenon, process or service according to a specified procedure. The result of a test is normally recorded in a document sometimes called a test report or a test certificate.
test method	Defined technical procedure for performing a test.
traceability	The property of a result of a measurement which can be related to appropriate standards, generally international or national standards, through an unbroken chain of comparisons.
trip blank	A blank used to identify the presence of volatile compound contamination attributable to transfer across a sample container septum during shipping and storage of samples. A trip blank is a sample of analyte-free matrix transported from the laboratory to the sampling site with the empty sample containers. The trip blank is stored on-site with the sample containers and field samples and then transported back to the laboratory with the samples for analysis. The trip blank is received and processed as a sample by the laboratory.
validation	Confirmation by examination and provision of objective evidence that the particular requirements for a specific intended use are fulfilled.
validation (data)	A process used to determine if the available project data satisfy the project DQOs. The frequency and scope of the data validation process may vary, but should always be consistent with project DQOs. An appropriately qualified independent party that is not

	affiliated with the data generators or data users performs data validation.
validation (software)	The process of evaluating a software product to determine whether it provides a correct result within specified tolerance requirements.
verification	Confirmation by examination and provision of objective evidence that specified requirements has been met. In connection with the management of measuring equipment, verification provides a means for checking that the deviations between values indicated by a measuring instrument and corresponding known values of a measured quantity are consistently smaller than the maximum allowable error defined in a standard, regulation or specification peculiar to the management of the measuring equipment. The result of verification leads to a decision to: restore to service, perform adjustments; repair, downgrade, or declare obsolete. In all cases it is required that a written trace of the verification performed be kept on the measuring instrument's individual record.
verification (software)	The process of determining whether individual elements of a given software product are performing their intended functions or operations.